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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,343	03/10/2004	Chu-Jung Shih	08703.0005-01	1988
22852	7590	03/03/2006	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			GHYKA, ALEXANDER G	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/796,343

Applicant(s)

SHIH ET AL.

Examiner

Alexander G. Ghya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).


Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

ALEXANDER GHYKA
 PRIMARY EXAMINER

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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The Applicants' RCE of 1/18/2006 has been entered in the record. The Applicants' arguments and amendments have been considered, and the rejection under 35 USC 102 is withdrawn. The following new rejection is made.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al (US 6,329,269) in view of Ihn et al (US 6,200,837).

The present Claims generally require a method comprising providing a substrate; providing a layer of insulating material over the substrate; depositing a layer of

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amorphous silicon over the layer of insulating material, crystallizing the layer of amorphous silicon in an oxygen environment for a reduced surface roughness on the layer of crystallized silicon, treating the layer of polysilicon to change the properties of a surface of the layer of polysilicon after the layer of polysilicon is formed and smoothing the surface of the layer of polysilicon .

Hamada et al disclose a method of fabricating a semiconductor device which includes forming an amorphous semiconductor film on a substrate and oxidizing the surface of the amorphous semiconductor film in an atmosphere containing water vapor and oxygen. See the abstract. Hamada et al disclose that the oxygen provides a reduction in surface roughness. See Figures 3 and 19 and column 2, lines 15-25. Moreover, Hamada et al disclose that the amorphous silicon is formed on an insulating layer on a substrate. See column 3, lines 45-55 and column 8, lines 40-45. As required in the present claims, the semiconductor device of Hamada et al can be used in a liquid crystal device. See column 8, lines 40-45. With respect to Claims 4 –8 and 13-15, Hamada et al discloses the simultaneous crystallization of the amorphous silicon film and formation of a silicon oxide film on the formed polycrystalline film. Hamada et al disclose controlling the duration of the heat treatment in an oxygen environment, which would inherently control the thickness of the oxide layer. See column 12, lines 40-60. With respect to Claims 2 and 13, Hamada et al disclose the use of ozone in the heat treatment in an oxygen environment. See column 16, lines 60-65. With respect to

Claims 3, 6, 9, 12 and 18, Hamada et al disclose etching the oxide layer with hydrofluoric acid. See Column 15, lines 45-55.

Hamada et al differs from the present claims in that it discloses the simultaneous crystallization of the amorphous silicon film and the formation of a silicon oxide film, whereas the present Claims require two separate steps.

Ihn et al also disclose the formation of an LCD device and is merely cited to show crystallization and then oxide formation as two separate steps in the formation of the LCD device. See column 1, lines 45-55.

It would have been obvious for one of ordinary skill in the art, to use two separate steps in the process of Hamada, as disclosed by the Ihn et al reference, for their known benefit in forming an LCD device as disclosed by the Ihn et al reference. The Examiner notes that in general, the transposition of process steps or the splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held to not patentably distinguish the processes. See *Ex Parte Rubin*, 128 USPQ 159 (1959). Moreover, selection of any order of performing process steps is *prima facie* obvious in the absence of unobvious results. See *In re Burhans*, 69 USPQ 330 (CCPA 1946). Therefore, it would have been obvious for one of ordinary skill in the art to conduct the simultaneous steps of Hamada et al separately, in light of the disclosure of Ihn et al that the steps can be performed separately, as both references pertain to LCDs , and the splitting of one step into two would be considered to be within the skill of one of ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

AGG
February 27, 2006

ALEXANDER GHYKA
PRIMARY EXAMINER

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